A coach should provide entertainment

Editors Note: At the beginning of the basketball season *Monday Magazine* has sent Terri Bell to interview the new basketball coach, Frank Arnold. Coach Arnold was working as assistant coach to John Wooden for the UCLA Bruins before coming to BYU.

Monday Magazine: *What is your basic coaching philosophy?*

Frank Arnold: Collegiate basketball is a source of entertainment for the student-body and the people in the community, so the responsibility of a basketball coach is to give them a product that will entertain them. At the same time it must be a product the youngster will enjoy playing. To me that means an aggressive, intense, fast-paced style of game.

Monday Magazine: *How can the gospel be applied to basketball?*

Frank Arnold: There are a lot of carry-over values in team play, cooperation, fellowship and comraderie to bring about spiritual growth. We call upon our Heavenly Father on many occasions for his blessings physically and other ways. You can't have your physical being in premium condition unless you live the principles of the gospel and utilize prayer, faith and patience. Basketball is a game of balance—physical, mental, emotional and spiritual. When you talk about the principles of the gospel, you're talking about that kind of balance. If you don't have that, you won't be much of an athlete.

Monday Magazine: *How far do you let your relationship with the players extend to other areas beyond basketball?*

Frank Arnold: I hope they will learn to respect me and like me at the same time. I want them to feel free to come to me any time with any problems they have. I want to be a good listener and be able to help them in any way I can. I hope our relationship is not a pseudo coach-player relationship where he's a piece of merchandise that I'm trying to refine into something that can be used by us on the basketball court to make us look like successful coaches. We're dealing with a young man, a human being, and there's a whole lot more to it than just winning basketball games.

Monday Magazine: *How important is unity on a team?*

Frank Arnold: Without unity you don't have coordination in the program, you don't have team play. It's the single most significant factor, on and off the court. I think back on the analogy Coach Wooden (John Wooden, former UCLA basketball coach) gave our basketball players my first year at UCLA. He said in the history of mankind all the great civilizations have crumbled from within, and that's how the great basketball teams are destroyed, not from without, but from lack of unity in the program. If we have unity, we're going to be successful. When I say success, I don't mean necessarily winning the conference championship. Success is very simply doing the best you can with what you've got. If we can do that, we've got no reason to be ashamed.

Monday Magazine: *What are some memorable experiences you have had as a coach?*

Frank Arnold: The most memorable occasions I have are when kids and parents come back and say thanks, you've done something meaningful for me or for my son. Winning the national championships at UCLA were big moments in my life.

Monday Magazine: *What is the most enjoyable part of basketball for you?*

Frank Arnold: Coaching, getting on the basketball floor and working with these young men. I enjoy recruiting and going into the home of a young man and meeting him and his parents, visiting with them and talking to them about the education we can provide. I guess I have enough ham in me that I even enjoy giving public speeches.

Monday Magazine: *What don't you enjoy?*

Frank Arnold: I don't enjoy telling a young man he can't make it as far as playing on the team is concerned. He might be a youngster who really wants to play basketball, but he's simply not good enough. I'm not the kind of guy who's going to put a list on the blackboard of players who made it.

"Success is very simply doing the best you can with what you've got."

That's the easy way out. I think I owe it to this young man to take him aside and talk to him privately about it. I was at UCLA for two and one-half years before we lost a basketball game and people walked out of the gym saying, Wooden is over the hill. That's the kind of fans we get quite often — shallow, pseudo-fans. Those are the hard things.

Monday Magazine: *How do BYU recruiting procedures enable you to compete with other schools?*

Frank Arnold: We have extremely strong pluses and some very definite minuses. The pluses far outweigh the minuses. I don't feel you can have a successful athletic program of any kind unless you have an outstanding academic institution. We have that at BYU. Without it you can't have the right kind of program because you can't get the right kind of people into your program. You have to have support from the administrative level. We have that from the Presidency of the Church to the president of the university right through to our athletic directorship. We appreciate that because without it we would flounder. You have to have great facilities and there are none greater in America, or the world for that matter, than right here at BYU. You must have sincere, warm people in the community. We have people who are interested in basketball and are interested in people. Without that you can't bring youngsters into a program with the comfort and peace of mind we can here. You need a budget that will allow you to go out and do the things you have to do as a coach. We have sufficient funds to do just that.

Monday Magazine: *What aspects of BYU hinder recruiting?*

Frank Arnold: We don't have exposure. This is one of the most significant factors in successful recruiting. Most of the highly-skilled high school players in America are interested in playing professional basketball. They know if they have exposure at the collegiate level their chances of playing pro ball are better if they are a household name. We aren't fortunate enough to have that kind of exposure in the Rocky Mountain area. I like the idea of replaying our ballgames the night of the game. There is some concern that it might affect our crowd. I happen to think if we are going to have a successful, entertaining program, those people are going to come see us whether there's a blizzard outside or not. I'd like to see every game we play away from home played back in Provo the night of the game, if possible. I'd like to see games televised throughout the nation. There is no reason they shouldn't be, because we are a world-wide church and our exposure should be world-wide. This is going to give us the kind of program that will enable us to bring in the blue-chip athletes.

Monday Magazine: *How do you feel about recruiting black players?*

Frank Arnold: We don't have many black people on this campus. It's difficult for them to put themselves into this kind of environment, where they have little, if any, social life. I think it's very important, however, that we do get black people into our program for their sakes and for the sake of BYU and the Provo community. My philosophy on recruiting types of individuals is this: we must first of all have outstanding basketball players in our program. Secondly, he must be a young man who is sincerely interested in a college degree. We do not want an athletic bum who is just interested in coming to play for a couple of years and then moving on to pro ball. We are in the education business. These young men must understand that basketball is a great, wholesome thing, but it is not the most important thing in their lives. The third thing we have to have is an outstanding citizen. If a black man meets those three requirements, we're going to recruit him.

Monday Magazine: *How do you feel about high school athletes going straight to the pros?*

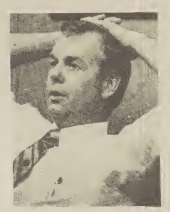
Frank Arnold: It's a travesty. There are some high school players who are physically able to play pro basketball. But there is more to a college education than book learning. He'll gain knowledge in social and emotional growth. He'll learn more about life and people in college. I think he'll be isolated from those things and that kind of growth in the professional world. That's why I think they should have the college experience. The pros are doing a young man a great deal of injustice. He's not going to play pro basketball all his life, and what's he going to do when he's finished? He wouldn't want to sit back for the next forty years and be a nothing. He's going to want to be a productive person with some skills to call upon. He'll get those in a college education.

Monday Magazine: *How does your family support you as a coach?*

Frank Arnold: Totally. It's a shame that my children get to see so little of their father. It's sad that I'm missing my children grow up and I don't know what to do about it. I try to spend as much time as I can with them. They're happy I'm a coach, they're happy for me. They have never gone through the pressures of their father being a head coach. Being an assistant coach is very easy. There is a tremendous difference between making suggestions and making decisions. My wife and children are at the point now that they're going to find out how difficult it is to be the family of a head coach, but it's a challenge they accept.

Monday Magazine: *What sports did you play in school?*

Frank Arnold: I made the high school basketball team when I was a junior. One Saturday afternoon I went to a practice before the season started with my best friend, who didn't make the team. One of the players was

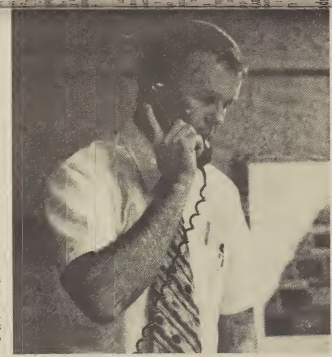


"I don't feel you can have a successful athletic program of any kind unless you have an outstanding academic institution."

absent, so my friend dressed down and practiced with us. The coach gave him my position and I was cut from the team. I sat on the bench in college. My statistics were always listed under 'other.' I was a thinker, not a doer. I did play baseball on the high school and college level. That was my claim to fame.

Monday Magazine: *Are there advantages or disadvantages to coaching Mormons?*

Frank Arnold: I sure can't see any disadvantages, other than the fact that there aren't enough of them playing basketball. As far as advantages, the kind of young men I have recruited in my experience as a major college coach has totally upheld Mormon standards. While they haven't been Mormon in faith, they have been in lifestyle. So I'm not used to coaching any other kind of guy. Occasionally you get someone who grows into a ding-a-ling or you didn't know was a ding-a-ling when you recruited him. That can create some problems. But frankly, there are some Mormons who are ding-a-lings too. You can't generalize and say because he's a Mormon, he's a great guy. I believe he's a great guy because he's living a Mormon lifestyle, whether he's a Mormon or not. I have heard more obscene language in some circles on this campus than I did in the four years I was a member of the UCLA basketball staff.



New head basketball coach, Frank Arnold. "Collegiate basketball is a source of entertainment for the student-body and the people in the community, so the responsibility of a basketball coach is to give them a product that will entertain them."

Monday Magazine: *What kind of changes are you making in game strategy?*

Frank Arnold: We'll start with a full-court press, but if we're not fast enough, we'll get out of that. The material will dictate what we run. I think we can do some of these things, and rather successfully. If we can't, we'll do what we can do successfully and we will recruit the kinds of people in the future who can run and can press. I will not be forced by public pressure or any other kind of pressure to run the style of basketball we're not able to run, just because somebody wants to see it. I want to see it too. We'll try it, but we'll do what's right.

Monday Magazine: *What kind of person is Coach Wooden to work for?*

Frank Arnold: He's a wonderful man. He's a good candidate for a stake president. He's a fierce competitor and has his life in the proper perspective. He has been of significant value to me, not so much in the Xs and Os of the game of basketball, but in working with people.

Monday Magazine: *Did he ever show any interest in the Church?*

Frank Arnold: He is a very devout member of a small church in Santa Monica. He and I talked about the Church on more than one occasion. He was given a Book of Mormon for speaking at a stake fireside and he gave it to me. He said he appreciated it and respected it, but he just wasn't interested.

Monday Magazine: *What kind of influence has he had on your coaching philosophy and techniques?*

Frank Arnold: Mine were very similar to Wooden's before I joined him, so it was more a matter of confirmation than change. The first day I was interviewed, the UCLA athletic director told me that John Wooden knows how to win. I thought it was a very strange statement, because everyone knows how to win you get the right kind of players and strategy. But after spending four years there, I know what he spoke of and yet I can't explain it. There is a difference in what you do to win and it's not just in players and strategy. I hope some of it has rubbed off on me.

Monday Magazine: *A lot of people today feel sports plays too important a role in a university. How do you feel about this?*

Frank Arnold: It has a very definite place in university life, as long as it's kept in proper perspective. It can be a great source of entertainment for the student body and the alumni and a source of exposure for the entire university and the Church.

Monday Magazine: *How do you feel the WAC will be this year?*

Frank Arnold: Very, very good. I think it will be stronger than other years. BYU will be picked by the so-called authorities, whoever they are, to end up somewhere in the bottom half of the league. Arizona has everybody coming back off a great basketball team. UTEP has everyone back from a second-place team. New Mexico hired a coach who brought with him two 6'8" All-Americans. They have an outstanding junior college kid coming from the East Coast, so right off they have a great team.

The Daily Universe
Monday Magazine

(The way we were...)

Vol. 29 No. 61 Monday, December 1, 1975

Photos by Nelson Wadsworth, Randy Taylor and Lisa Watts

PROBING POLLUTION

Gathered around *Monday Magazine* editor, Bruce Porter and advisor, Nelson Wadsworth are members of the investigative reporting class who worked weeks on this issue of *Monday Magazine*.

Probing pollution

The story behind the story

Take 22 students, 72 long distant phone calls, more than 100 interviews and over 300 man hours and you've got what it took to gather, dig, scrape and search out all the information necessary to assess the relationship between industrial growth and its resulting pollutants in Utah County.

The idea originated in the minds of the *Monday Magazine* editor and advisor as far back as the summer. Nelson Wadsworth, assistant professor of communications thought it would make an excellent term project for his indepth reporting class, so Bruce Porter, *Monday Magazine* editor and Wim Jordan headed up the task force of researchers, reporters, and writers and began the colossal task in October.

Soon stories, documents and information started piling in, literally piling in on the *Monday Magazine* editors' desks. The stacks were no less than three feet tall.

Meanwhile back in the darkroom a photographic tast force was laying out its plans. Photographer Paul Fletcher went to Geneva every night for a week at 4 a.m. and took pictures with infra-red film.

Photographers Wadsworth, Randy Taylor and Lisa Watts journeyed to the top of Squaw Peak to take pictures of the entire valley (see cover).

Porter and other staff members took a tour of Geneva while other staffers went everywhere from Utah Lake to Kenecott to the garbage dump.

People in the home office were calling Denver and Washington D.C. to check on EPA regulations.

The grand finale to the whole episode was an all nighter by the editors and Jordan, who pulled the information together and began lay out.

Some people may call it burning the candle at both ends, but so far that hasn't been a major cause of pollution.

From smoke signals... to smoke stacks

In 1776 the Indians saw the first whitemen in Utah County and the first whiteman saw some of the first pollution. The two Franciscan priests, Francisco Antanasio Dominquez and Silvestre Valez de Escalante were "welcomed" to the valley by vast masses of smoke arising from all parts, the news of their entrance into "The Valley of Our Lady of Mercy of the Timpanoztzis," apparently having come before them.

Despite the smoke screen, still a familiar site 200 years later in 1975 (though not caused by the Indians!), the two Spanish officials had good reports of the verdant valley. "This place is the most pleasant, beautiful and fertile in all new Spain," they wrote. The priests thought that the climate was good, comfortable both day and night. They said the area was full of timber, grass, and water. And they reported the lake abounded in fish.

Apparently Parley P. Pratt didn't think so when he arrived with some of the early Mormon settlers in 1847. He wrote, "We sailed up and down the lake shore on the western side for many miles, but had poor success in fishing."

When the Mormon Pioneer company had first arrived earlier in the year, William Clayton reported:

"There is timber all around the Utah Lake and plenty of good grass. . . . All the valleys abound in persimmons and grapes which will make the best kind of wines."

The growth of the valley boomed and soon industry hit. Some of the first industries started in the later 1800s were a woolen mill, a foundry and a machine company. The foundry turned out the largest steam engine and boiler made in Utah up to that time.

And it was steam engines that ended up carrying more pollution into Utah county. The arrival of the Geneva Steel plant in 1942 didn't change the air quality drastically at first. It was already bad. Mr. Fred Markham, a local architect who lived in the area at the time, said that he didn't note a particular difference in the air. "We were using a great deal of coal stoves at that time and trains coming in brought more coal smoke."

Now, 200 years after the first smoke-signals, nearly 160,000 people live in the 2,014 square miles that make up Utah County. A center of migration for the entire state of Utah, newcomers are attracted by Brigham Young University, the largest firm in Provo, and by industry, in which United States Steel Corporation takes the lead in size and employes. But the people are also drawn by the surroundings–the towering mountains that frame a well groomed community and vast acres of rolling farm land. Two national forests and three state parks are near by.

This is your county. Whether a permanent resident or a student we all must breathe the air of our valley, we all need the water. It should be all of our concern to protect the environment which the first whitemen so fondly described as pleasant, beautiful and fertile.

In an attempt to assess the relationship between industrial growth and its resulting pollutants, *Monday Magazine* and *The Daily Universe* have made a major study of the situation. (See the story behind the story this page). The study was not intended to represent any particular view point, but only to be an objective analysis of the situation.

Monday Magazine introduces today the first part of a five part series with a story on the United States Steel, Geneva Works. The rest of the series will be carried each day in the *Daily Universe* commencing tomorrow, with Air pollution, Wednesday with Water, Thursday with solid and liquid waste, and concluding Friday with the political and medical aspects of the situation.

All thing by immortal power

Near or far Hiddenly To each

other linked are, That thou

canst not stir a flower Without

troubling of a star.

—Francis Thompson

The Daily Universe

The Daily Universe is an official publication of Brigham Young University and is published as a cooperative enterprise of students and faculty. It is produced as a laboratory newspaper in the Department of Communications under the governance of a Management Team and with the counsel of a University-wide Daily Universe Advisory Committee.

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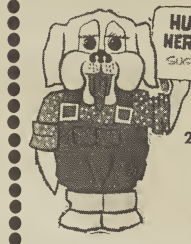

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—HOME OF QUALITY, VARIETY & VALUE—

Farmers around Geneva suffer from small, black, shiny, particles of pollution called kish that settle on their crops.

The 'kish' plague

Farmers surrounding the Geneva Steel plant are plagued by "Kish," small, black, shiny particles of pollution that settle on their crops.

Holly Maxfield, a dairy farmer in Lindon, says the particles, which are blown in from the steel plant, feel like graphite and stick to the skin of anyone working in the field.

Rulon Gammon of Vineyard said the particulates don't seem to harm anything – they're just a nuisance. "They get on your skin and turn your exposed areas completely black," he said.

U.S. Steel officials describe "Kish" as "excess carbon that separates and solidifies as small black particles. When iron is poured from the ladle into the open hearth furnace, these carbon particles escape and either collect on the floor or fly into the atmosphere. Air conservation and open hearth crews are, however, seeking ways to bring this condition under control."

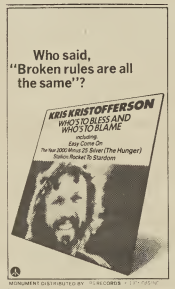
Maxfield said he has asked Geneva's help in doing something. "But," he said, "they're in control of this valley, and all they want me to do is put up with it. Whenever I talk with them, they tell me it's here to stay and have a 'so what' attitude."

Maxfield recalls an incident occurring once due to the extreme thickness of "Kish." "When I hired a guy from on the hill to swath my hay, his machine turned so black he thought he had sprung an oil leak and spent over an hour looking for it.

Both Gammon and Maxfield agree the level of "Kish" has declined somewhat in the past two years. "At least now it's tolerable. I don't have to wear a mask in the field anymore," Maxfield said.

Gammon said there aren't many farms in the area that have the problem. "Only a few immediately surrounding the steel plant. That is part of the reason we con't get any action: there aren't enough of us to be heard."

An overall view of Geneva's open hearth.


Who said, "Broken rules are all the same"?
KRIS KRISTOFFERSON
WHO'S TO BLESS AND WHO'S TO BLAME
including
Easy Come On
The Year 3000 Minus 25 Silver (The Hunger)
Station Rocket To Stardom

Book review

The legendary Lev

Potok, Chiam. *My Name is Asher Lev*. Fawcett Crest Books, paperbound $1.75.

Have you heard of the notorious and legendary Asher Lev of the paintings *Brooklyn Crucifixion I & II*? The Hasidic Jews accuse him of being a traitor to his people. Many Christians regard him as a blasphemous desecrator of ideas sacred to them. In his own words, he declares himself to be none of these, and yet, in a certain sense, all of them. He invites you to come walk with him as he explains and justifies the development of his mysterious gift.

Asher is a painter, some critics say, of the magnitude of Michelangelo and Picasso. He is also an Orthodox Jew of the Hasidic sect. Hasids do not sanction painting as an art, especially the way Asher gift" is demonic and should be suppressed. Asher can not believe that his God-given abilities should not be developed. "If You don't want me to use the gift, why did You give it to me?" he would pray.

It is ironic that in a Jewish sect such as the Hasids, who are themselves so different a people, there should exist an extreme intolerance towards any deviation from the established norm. Why is difference so menacing? Why is deceitful conformity often preferred to honest uniqueness? "Who am I?" Asher asks himself. "Who are you?" the book whispers to the reader.

Those of you who read this book may find yourselves with a different answer to that question than you have had previously. And those of you who have struggled with the frustrating choice between being honest to yourselves or being accepted into a comfortable social mold will find a fellow searcher in Asher Lev.

- Karen Lewis

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15. Cosmetics

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23. Insurance, Investment

LIFE Health Maternity New York Life ask for Richard Kuder 373-5926 Eve 374-2985. 12-11

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EXPERT Watch Repair Dept. Bullock & Losee Jewelers 19 North University. 373-1379 CTFN

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DIAMOND unmounted ½ carat written appraisal at $420 Sale cash $300 or best offer Call 377-8353 or 375-4834 12-12

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ALCOA Subsidiary has part time opening. Interview Tues. Wed. Thurs 5:30 pm $90/week 142 N 100 E Provo, Utah. CTFN

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LIFE Health Maternity New York Life ask for Richard Kuder 373-5926 Eve 374-2985. 12-11

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PARTTIME work for the next 4 weeks Work your free hours Excl wages Call 375-3761 ask for Bruce. 12-2

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44. Entertainment

BRANCHES! Having a party? Hire a Magician Fun show, low cost Phone John 375-0099 Eves. 12-10

48. Household Goods for Sale

BEAUTIFUL Gold traditional sofa $100 or best offer Call 374-8353 375-8834. 12-12

50. Musical Instruments for Sale

WHAT is music Man? Great new amps from Leo Fender, try one today at Progressive Music 333 W 1st North Provo. 12-8

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LIKE New custom 100 AMP covers inc-also fender mustang guitar You make the offer 375-2851. 12-1

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52. Miscellaneous

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YOU pick up Linoleum at color tile or etc I install Save! Save! 373-6543 ask for 214. 12-2

CRISP Apples Take some home for the holidays Free delivery Call 374-1405. 12-10

FOR Sale Geese $6.00 Ducks $3.00 785-4386. 12-16

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TELESCOPE 450x All attachments need money. Cheap beautiful shape. 3 lenses 375-8185 after 7. 12-8

NEW Typewriter- Smith Corona Coronet Electric 12 $150 Call Tom 377-5622 or 224-3852. 12-9

CUT FIREWOOD for sale pick up load $25.00 Call 785-4061. 12-12

53. Wanted to Buy - Misc.

OLD coins wanted. Paying cash for rare coins, gold coins silver coins. 225-5887. 1-8

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GIRLS Ream Apt for sale $52 mo & elec Going to Hawaii for winter call Ronnie 374-2543. 12-1

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FRIEND coming to school winter Heritage Halls contract open Call after 9:30 p.m. 377-7241. 12-1

1 MENS contract prvt bdrm. 2 bath kit. crpt. util pd $50 mo See to believe Avil Dec 1-95 S 600 E #27 Call Guy 377-0539. 12-1

MUST sell mens contract winter and December-Apt in Marshall Arms Clean Call Scott 375-6239 12-4

I WOULD like someone to take over my contract in Deseret Towers Please call 377-4932. 12-11

3 CONTRACTS for win 375-1202 at Miller apts Good location Good branch & Fun roommates. 12-11

GIRLS Delux Townhouse near Y 57 W 700 N $56 3 bdrm 2 bath Great branch 377-1983. 12-9

MONTE VISTA girls contract available Dec 25 Call Rita 375-0240 12-12

GIRLS apt close to campus Available Jan 1 only $40 a month call 225-2242/377-2635 12-12

2 GIRLS contracts for sale at Reams apts $52/mo Same apt Call Karen 377-7654 Super 38 Branch 12-4

BOYS apt now accepting contracts for Jan-Lots of storage and nice fireplace Call 225-2242. 12-12

TWO mens contracts in DT for Winter sem in same room Great Branch, Good view 377-0425. 12-3

MUST sell contract winter sem Utilities pd $53.40/mo Call Susan 377-4961. Close to campus 12-2

IMMED. Open 2 girls in apt call 377-6177 or see at 65 N 300 E Provo $45/mo util pd. 12-2

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MUST sell! Girls contract Ream Apts $52/mo & elec. Walk to Y Open Dec Call Ann 375-7178 12-1

DUPLEX-One girl needed. $50/mo & gas & elec. 70 E 1000 S Orem. Call 224-1472. 12-1

2 BEDROOM unfurn apt cpls&children $130/mo util incl lovely res area call 375-6388. 12-9

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MOBILE home for sale 8x40 partly furn Good cond Call 224-1561 894 N State #28 Orem 12-2

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1975 HONDA 125-800 miles $525 or $100 and take over payments 225-8303 or come 134 E 100 N Orem 12-12

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71 CAMARO R/S 350 Great Shape! Excel. Mileage, new paint, tires, other extras. $2,200 375-7679. 12-4

1973 VEGA GT 22,000 mi Air cond Automatic trans Call Kathleen 374-4044. 12-9

1972 FIAT 124 Spider Super Sports car. Like new, many extras 30 mpg. Must see 224-1909. 12-9

72 VEGA GT Hatch A/C 36,000 mls $1,550 or best offer & 68 Triumph TR4A $700 Call 373-8248. 12-8

FOR sale 1 girls contract $42/mo & util 611 N Univ. Call Dianne 4-6 pm 374-8855. 12-10

71 TOYOTA Corona Delux. Low mileage excellent condition. Best offer. call Chris 225-3125. 12-1

1968 TOYOTA Corona. recent engine overhaul. new tires good mileage $650 374-5451. 12-3

'71 PINTO wagon Auto new brake & inspectnm Excellent cond. Call 375-7766. 12-12

78. For Rent - Miscellaneous

RENT-A TV B&W, Color, Stereo & typewriters Lowest rates. Stokes Bros., 44 S. 200 E., 375-2000, 10 a.m.-6 p.m., Mon-Sat. CTFN

RENT WITH OPTION TO BUY TV's, stereos, washers, dryers, vacuums, sewing machines. AAA TRADING CENTER 402 W Center, Provo. 374-8273. CTFN

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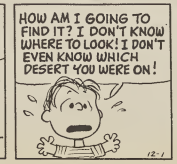

Photo by Nelson Wadsworth and Randy Taylor

A pall of smog hangs over Utah Valley in this view taken from Squaw Peak, illustrating how the scene looks to the naked eye. In comparison, the same view on today's cover taken on infra-red film – which penetrates smog – shows how the valley would have looked on a clear day before man-introduced pollution. Utah Lake, not visible in the picture above, shows up clear and dark on infra-red.

Geneva—Sinner or Saint?

Editor's note: This is the first of a five-part series on the environment in Utah County. In addition to the major series of five articles, related articles appear in today's Monday Magazine *(see pages 2, 4, 10 and 19) and in this weeks's Daily Universe.*

By

Bruce D. Porter

and

Doug Tullis

Monday Magazine Writers

"It doesn't hurt to give a damn."

—U.S. Steel slogan for employees

Steel. The tough backbone of skyscrapers, the muscle of machinery, the weapon and armor of huge armies. The year was 1941, and the hollow sound of heavy artillery was sounding in Europe and Asia. France had fallen, Russia was reeling before the Nazi blitzkrieg, and Japanese troops threatened Indochina.

Uncle Sam was hungry for steel. Pearl Harbor made him ravenous. He needed steel to fight a war, steel to shield ships and tanks. The western states lacked even a single major steel manufacturing plant. Uncle Sam decided he would build one, and the search for a suitable site began. It had to be in a region abundant with the raw ingredients of the steel recipe, near an abundant water supply, but far enough from the west coast to be safe from surprise Japanese attacks.

On Feb. 17, 1942, Sam made his choice. He would build the world's most modern steel plant on 1,500 acres near the tiny resort town of Geneva. Two years and $200 million later, despite fires, engineering problems and acute labor shortages, blast furnaces began to burn, and the first smoke from the high chimneys of Uncle Sam's Columbia-Geneva Steel Plant began to issue forth.

Mad about Geneva

But if being "mad" about Geneva in 1948 meant being excited about having heavy industry in Utah, being "mad" about Geneva in 1975 usually means being angry about belching clouds and dirty air.

"I remember waking up in the middle of the night, wretching. It was the air, and I'm sure it was from Geneva," says David Dalton, a BYU music professor. "The smell resurrected old memories of stillborn calves, their bodies decomposing. I wrote them a letter and told them so. They answered with the usual propaganda, the old cow in front of the pasture brochure."

"It smells awful," says Richard Evans, a service station attendant, "I've never smelled air pollution so bad, not even in Southern Cal."

"I'm upset about it," comments J. Keith Melville, a BYU professor of political science, "The most significant visual pollution in this valley comes from Geneva."

A BYU student from New Jersey, Bruce McCabe, believes "air pollution is a serious problem. Geneva seems to be responsible for most of it."

Marius Gedgaudas, a technical advisor for the Environmental Protection Agency (EPA), says simply, "U.S. Steel is the primary cause for Utah County's violation of national air quality standards."

Saint or sinner?

What is the truth about USS Geneva Works? Is Geneva Steel indeed the worst polluter in Utah County, a hazard to health and a destroyer of natural beauty? If so, why? What can be done about it? On the other hand, is it possible that Geneva's contribution to Utah County's problems is not as great as most citizens assume? Do the clouds of smoke and steam, the chocolate and pink hues, and the acrid smell of the coking operation really tell the whole story?

It takes but 10 minutes to drive from BYU to Geneva Works via Interstate 15. From the Geneva exit the road west leads across a railroad track directly to the central administrative building plant. It is a red brick structure, reminiscent of a high school, with an American flag waiving on a tall, silver flagpole. A large banner above the door proclaims, "Geneva Works—Home of the Errors Zero Team." Several hundred yards to the north is the plant itself. The white plumes of steam and the massive piles of coal and gravel fade into the pink sky of the west with an eerie effect.

"As steel plants go, Geneva is a very clean mill," says Henry A. Huish, General Superintendent of Geneva, "We are all environmentalists. We all want clean air and clean water, but we need to recognize someone has got to pay for it. The cost of operating pollution control devices must be made up in the cost of our product."

Huish comes across as a man who has spent long years behind the desk, a man suspicious of journalism's motives, but capable of a cautious diplomacy, nonetheless.

"To have a prosperous industrial nation and enjoy the conveniences we have, we are going to have to accept a certain amount of pollution," he says.

Huish and the rest of Geneva's management insist that the steel plant has gone the second, third and fourth miles in controlling emissions from their plant.

Boyd Erickson is Geneva's senior environmental control engineer. A graduate of the University of Utah, he has been with the company for nearly 25 years. He supervises all the technical aspects of air, water and solid waste cleaning, recirculation and disposal.

Erickson points out that Geneva was considered one of the cleanest and most efficient steel operations in the country when it was first constructed. A number of control devices were installed concurrently with the original construction, including electrostatic precipitators on the blast furnace. (The electrostatic precipator is probably the most important and common gas treatment device in the industry. Gases are passed across a high voltage electrode which gives particles of dust a positive electrical charge. A ground plate, negatively charged, attracts the particles to it, where they are removed mechanically.)

Geneva publishes a list of the various air pollution controls added to the mill since 1950–the total adds up to 28 different types of control devices.

Open hearth

In discussing Geneva's efforts to reduce the emissions from its plant, Erickson points with particular pride to the open hearth furnace, where molten iron from the blast furnaces is refined into steel at 3,000 degrees Fahrenheit.

"This has traditionally been the worst polluter in the steel industry," he says. "That was also the case at Geneva until 1955. In that year, eight electrostatic precipitators were added to the open

(Cont. on page 4)

(Cont. from page 5)

hearth." The plant claims to be the first steel operation in the nation to have added the devices to their open hearth furnaces.

Erickson, and indeed all of Geneva's management, is even more proud of the eight wet scrubbers added to the open hearth in 1962. The scrubbers were designed and pioneered at Geneva, according to Erickson.

"In the area of open hearth control," says Huish, "We are a prototype for others."

"We are the only steel operation I know of," says Erickson, "That has a two-stage cleaning system on its open hearth furnaces – both precipitators and wet scrubbers."

There are no billowing smoke clouds pouring out of the long building with a pitched roof in which the open hearth furnaces boil the final raw steel. Periodic white plumes of steam come from the wet scrubber chimneys, and whenever a furnace is tapped–300 tons of molten steel poured in the open air into giant ingots–large amounts of fumes and dust escape into the air. Occasionally a high concentration of iron oxide in the gases passing through the cleaning stages will result in a pink or reddish steam coming from the chimneys.

Dave Bigler, U.S. Steel Public Relations representative in Salt Lake City: "If you're fair and objective, there's really only one side."

Pink conscious

"Nobody in the whole world is more conscious of that 'pink' than we are," says Erickson, "In order to meet the required standard set by the Environmental Protection AGency (EPA) we have had to increase electrical power to the precipitators and enlarge the collector main."

The plant had been operating under a variance from the State to allow it to make the needed changes necessary to insure that the standard would be met at all times. "As it was, we were operating very close to the limit. And now that we have made the changes, we are in full compliance." The variance officially expires at the end of 1975.

Critics of the steel plant admit that progress has been made, but are quick to point out it has only been made under outside legal pressure. Precipitators were added to the open hearth only in the wake of a devastating lawsuit brought against Geneva by dairy farmers in Utah and Salt Lake Valley (see related article, page 4.)

"There is a lot of confusion on the relation between regulator and regulatee," insists Dave Bigler, U.S. Steel's public relations man in Salt Lake City, "It is unfair to assume that only the regulator is interested in cutting down on pollution. The regulatee may also be interested. That is certainly the case with Geneva Steel. Our people live in this valley, we are committed to the future of Utah County, and we want to do all that is reasonable to keep Geneva's air and water emissions clean."

Economic Impact

Across the street from the Geneva Works administration building stands the small and faded Geneva Cafe. A number of signs hang on its walls, proclaiming their wisdom to humanity, "Stick your nose in our business anytime," "Today is the tomorrow you worried about yesterday," "Smoking is permitted here." Two men in coveralls are playing pinball. They are employees of Geneva Rock

Farmers sue Geneva

In the early fifties the Geneva Steel Works didn't have any control devices on the open hearth operation. As a result flouride from the iron ore left the smoke stacks and settled on the vegetation in the Utah and Salt Lake Valleys.

A lawsuit was filed by several dairy farmers alleging the flouride was causing death, sickness, and milk loss to their cattle.

The court ruled in favor of the farmers. "Several million dollars were paid to the farmers for their losses," said Dave Bigler, Public Relations Man for Geneva.

But some of the farmers were unsatisfied with the settlements and appealed the case toThe Tenth Circuit Court of Appeals. The court said the farmers claims were not substantiated, but the reocrd shows that an injunction was issued against Geneva to stop emitting the flourides. Effective controls were put on the open heart before the case had ever gone to court.

In a public meeting to the farmers, Loren Westhaver, the vice president of Utah operations for Columbia-Geneva Steel Division, made a pledge saying, "I do not know whether or not the Company – taking all the facts into consideration – has any legal liability for this damage, but I do know that the Company hopes to stay here for many, many years to come and it wants to be a good neighbor. It wants to do the right thing, whether it is legally obligated or not."

During the case there was a settlement of 880 claims totaling $4,450,234 and $8,689,000 was spent in the research and installation of corrective equipment at Geneva. Steel).

"It may cause bad air," says Ron Rasmussen, the shorter of the two, "But it gives people jobs."

"That's right," adds Jay Beal, "I think the work situation is most important. The state depends on Geneva."

Across the railroad tracks and to the left is a service station and popular truck stop. It is evening, and Richard Evans is working his shift as an attendant.

"Most people coming through here comment on the foul smell," he says. "Except of course, the plant employees. They love Geneva."

A middle-aged woman comes to the cash register and interupts Evans. "Don't knock industry," she says, "Industry feeds lots of people."

Indeed it does. Geneva Works literally feeds the 5,000, the number of employees at the plant during its peak operation periods. The $70 million they and their families receive annually accounts for over a fifth of all wages paid out in the county.

Besides wages and benefits paid to its employees, U.S. Steel paid $2.5 million in property taxes last year. Coupled with the property and sales taxes paid by employees of Geneva, the corporation embodies the single largest block of revenue in the county.

It was once said that as Geneva went, so would go the whole of Utah County. In a study done for a banking school, Larry King concluded that the impact of Geneva on the local economy is continually going down as the area grows, but it is still enough to be a substantial factor.

Many today are fearful that competition will drive Geneva Works out of business. For this reason, supporters of the steel plant often look askance at environmental standards and regulations, fearing the cost of controlling emissions will force the plant to raise its prices beyond what will be competitive.

"I think that's just a veiled threat the company uses to discourage opposition," says Dr. Keith Melville, Professor of Political Science at BYU.

Dave Bigler denies that Geneva uses such a threat, either covertly or overtly, and denies the plant has any intention closing down if the pressure to clean up or move out gets too great. Bigler is one of those rare PR men who seems to sincerely believe in what he says about his employer.

"USS Steel is like a fleet, and we're on the USS Geneva," he says, "It's our responsibility to keep this plant profitable, and we intend to do so. We are committed to Utah County and to our 5,000 employes. I want to make this absolutely clear–we have no intention of moving out."

Bigler is nonetheless quick to point out how foreign steel has been cutting into Geneva's west coast market. As of 1972, 38 per cent of the steel bought in the 13 western states came from foreign competitors, particularly from Japan.

The Japanese government is subsidizing its steel industry, making it able to sell steel on the west coast for $50 to $60 a ton less than U.S. steel makers.

cut costs, and improve production to stay competitive," Bigler observes.

Bigler admits that Geneva's current orders do not justify keeping the whole plant in operation–only three out of eight open hearth furnaces are currently in operation–but believes the long-range picture will be much better.

The majority of Geneva's steel is sent to U.S. Steel's Pittsburgh plant in California, and there most of it is turned into tin to make cans. (The construction of the Pittsburgh plant at the cost of $25 million was included as part of U.S. Steel's bid when Geneva was bought from the federal government after the war.)

Tomato cans

"Much of our steel becomes tomato cans," says Bigler. That's quite a lot of tomato cans for a plant that has the capacity to make as much steel in an 8 hour shift as in BYU's Cougar Stadium. From coal, iron ore and limestone to tomato cans is a long and complicated process, and the number of potential points in the long process where gases, dust or fluid can leak to the environment is quite large. The open hearth is only one of Geneva's problems. Other considerably worse, and in some cases, no easy remedy seems apparent.

The worst problem at Geneva is its power plant. With a generator rated at 50,000 kilowatts, the powerhouse burns natural gas during the warmer months of the year, but is being increasingly forced to use coal during winter months, when natural gas is channeled away for residential use.

The power plant is currently operating above both state and EPA regulations for visible emission and particulate pollutants, but it is doing so legally. The state has issued a variance and the EPA a "consent agreement" which allows the Geneva power plant to continue to operate until November of 1977 at its present levels. By that time, two electrostatic precipitators will be installed (at a cost of several million dollars) to bring the plant into full compliance. The precipitators will cut Geneva's total output of particulates by half, the particulates from the power plant by 98 per cent.

One Geneva employe said some workers in the powerhouse monitor the coal-burning process carefully, trying to keep the smoke 'clean', but others are only concerned about compressed air needed by the plant.

Coke plant

Erickson points to the coke plant as another problem with the plant. Coal is mined in Utah and Wyoming, and is sent to Geneva by rail. When it arrives, it is dumped. He indicated that in the past there had been a problem with the dust when dumping and crushing the coal. Spraying units were installed, and the problem was presumably corrected. But an employe at Geneva says the problem is far from solved, and with a small breeze the dust flies. When a windstorm comes over the plant, the coal dust is blown all over the valley.

After the coal is crushed, it is transported to the coke ovens, where it is baked for several hours to drive off all the volatile matter. When the coal is poured into the hot ovens, it immediately begins to burn and to put off smoke.

When the ovens are emptied, the red hot coal is pushed out and immediately begins burning. This also creates smoke. Erickson said the coke is sprayed with water immediately to cool it down. The spraying of the coke causes the huge plumes

cont. page 6

Palmtronic F-7. It's really three calculators.

It's a scientific-engineering model designed to replace and improve upon your slide rule

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Record review

Cottage songs fine

Cottage songs by Naomi Lewis is one of those albums that relaxes the listener and allows some thinking with the listening.

The first song on the album is called 'How Do?' and is very good. Setting the pace for most of the songs that follow, it has words and instrumentation which are well done and are, basically, soft and mellow.

Miss Lewis displays some talents resembling those of Olivia Newton-John or Judy Collins with her voice adding life to her songs.

All the songs on the album are written by Miss Lewis and are down to earth. They seem to center on themes of love and friendship, the things that most people can relate to.

Many of the songs have a deepdown philosophy that is lacking in much of today's music. From the song, 'I'm The Lucky One' comes the phrase, "When words aren't enough, I must lend my love to trust.' This song is one of the best on the album.

The song that is most likely to have a great future is 'Children of the Light.' It is the kind of song that sticks in your mind and, maybe, gets hummed a little as you walk down the street.

Another song that stands out is 'Gonna Find Me a Rainbow!' Once again the words and music have a memorable effect on the listener.

Since all songs and music were written by Miss Lewis, they have a tendency to sound somewhat alike. But because of their nature instead of becoming monotonous, they become quite soothing.

Miss Lewis, who graduated from BYU in 1970, seems to have a good way with words and music. If she stays on the mellow side, she may have a real future in the recording business.

The album may never become a million seller, but it does show promise. After all, how many albums today could be classified as relaxing?

– Tom O'Dell

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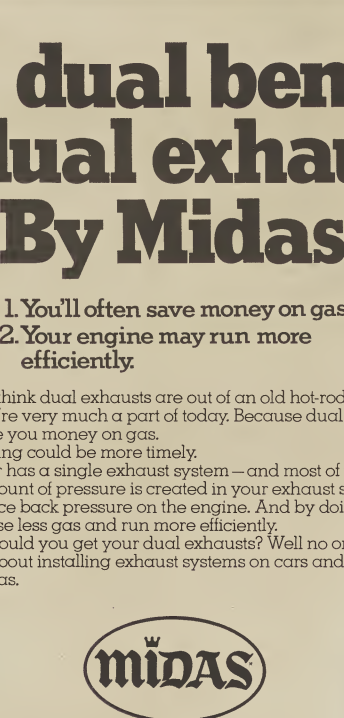
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Slavs slip by, but Aussies ousted

by
DOUG ARMSTRONG
Universe Sports Editor

The basketball Cougars won big against the Australian Nationals Saturday 99-70, but lost a close one, 78-75 to the Yugoslavian National team Friday night.

The Cats used an aggressive man-to-man defense and a fast-break offense to completely outplay the touring Australians as Coach Frank Arnold went to his bench early and used all 13 team members against the visitors.

It was a different story Friday night as the much taller Yugoslavians outrebounded the young Cougars 55-42 as former BYU-great Kresimir Cosic led his team with 16 points and 13 rebounds. The top scorer for the Yugoslavians was Drazen Dalipagic with 24 points.

Cougar Mark Handy led the Cats both nights with 18 points against the Australians and 14 against the Yugoslavians.

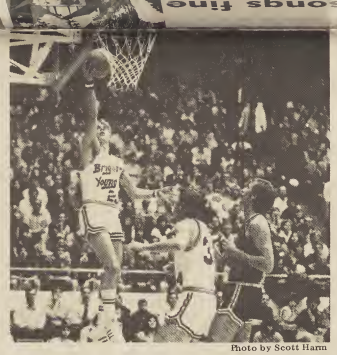

Photo by Scott Harm

Cougar freshman Steve Craig goes up for a layup in action against the Yugoslavian National Team last Friday night. The Cougars dropped the close contest, 78-75.

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Cats lose last

JACKSON, Miss. (AP) — Quarterback Jeff Bower and an effective running game enabled Southern Mississippi to trounce Brigham Young 42-14 Saturday in the season finale for both teams.

Bower ran three yards for one fourth-quarter touchdown and passed 29 to Greg Pieper for another to put the game out of reach after Brigham Young had narrowed an early USM lead to 20-14.

Southern led 20-7 at halftime on runs of nine and 22 yards by halfback Carlos Montgomery and field goals of 52 and 33 yards by Rick Palmer. BYU scored on Todd Christensen's 54-yard run.

Brigham Young closed the gap to 20-14 in the third quarter on a 16-yard pass from Gifford Nielsen to Jeff Blanc.

But Bower ran for a touchdown on the first play of the fourth quarter, and seven plays later found Pieper in the back of the end zone. A two-point pass from Bower to Montgomery made the score 25-14.

Southern Mississippi added a final touchdown on a two-yard run by Charles Clancy.

Southern finished with a 7-4 record in its first season under Coach Bobby Collins. Brigham Young, defending champion of the Western Athletic Conference, finished at 6-5.

USM has played all its games on the road for the last two seasons while its campus stadium is being enlarged to 36,000 seats. Saturday's game attracted 9,262 fans to the 46,000-seat Mississippi Memorial Stadium.

Collins, whose team started slowly this season, said his Eagles had improved. "That's understandable since the new staff had to get accustomed to the players and vice versa," he said.

Brigham Young Coach LaVelle Edwards called Southern "a very good football team, well coached."

"They didn't do anything we didn't expect," Edwards said. Then he paused and added, "Well, they beat us and we didn't expect that."

Bower, finished his collegiate career with a total yardage mark of 3,589, said his team's offensive line made its running game effective with only "six or seven basic running plays."

Southern runners gained 319 yards Saturday, with Montgomery gaining 104 on 17 carries, Curtis Dickey 69 and Ben Garry 67. Christensen ran 10 times for 91 yards for BYU.

UCLA killed

By KEN RAPPOPORT
AP Sports Writer

UCLA was given a taste of how the other side lives.

Well known for dishing it out over the years, the Bruins finally got to eat some humble pie. It was served up Big-10 style, by Indiana.

"Indiana proved they deserved their rating," said a distressed Gene Bartow after his No. 2 basketball team was convincingly beaten 84-64 by the top-ranked Hoosiers Saturday night. "We're feeling our way a little. It's obvious we're not in mid-season form. Indiana is a super team that already is in form."

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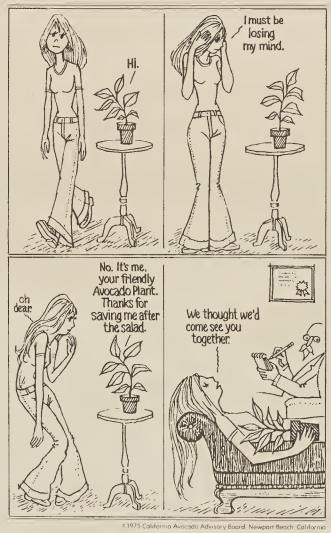
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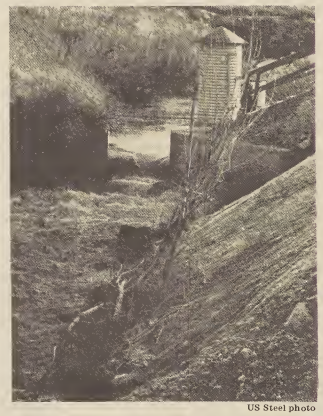

US Steel photo

Red hot coke is pushed from Geneva's coke ovens into a railroad car. Coke fumes give the plant its distinctive odor and constitute a difficult problem for the company's environmental engineers.

Photo by Paul Fletcher

An infra-red photograph taken by Universe photographers at midnight shows heat radiating from Geneva's open hearth furnaces. BYU photographer James Walker, an expert on infra-red films, says the photograph indicates the plant's precipitators and scrubbers are in operation. Universe photographers took similar infra-red views over a weeklong period with the same results.

Photo by Randy Taylor

During press conference with Universe reporters, General Superintendent Henry Huish says his company is working hard to meet EPA standards by 1977. "But I don't know how they could be any tougher," he adds.

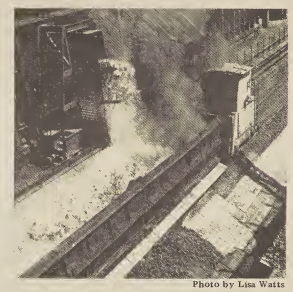

Photo by Lisa Watts

Hot water runs down a ditch on Geneva's west side on its way to a retention pond. The company pumps some 25 million gallons of water into the lake every day, but BYU civil engineers say it is cleaner than the lake water.

Photo by Randy Taylor

The industrial complex of Geneva Steel glistens in the background, reflected in the recycling pond adjacent to Utah Lake. The steel plant gets its water from wells and uses much of it over and over again in daily amounts larger than Salt Lake City.

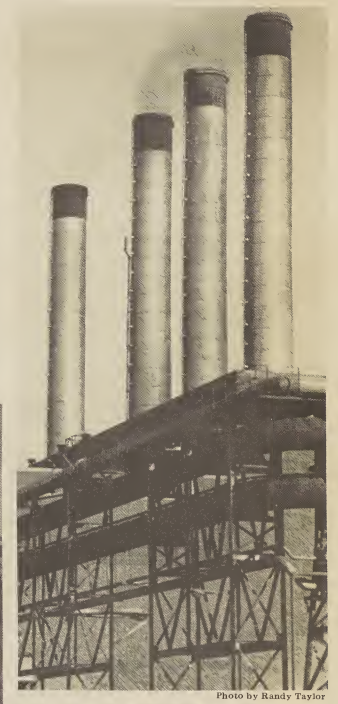

Photo by Randy Taylor

The stacks of Geneva's power plant reach toward the sky. Originally designed to burn natural gas, in recent years it has been forced to burn coal, a source of pollution which US Steel is required to clean up by 1977.

Geneva Steel

(Cont. from page 4)

of steam that rise over the plant.

Geneva is currently contesting the EPA's published regulation on coke plant emissions. "We feel they are impossible to comply with," Erickson says, "Even the cleanest steel plants in the country couldn't meet the requirement. A steel plant back east tried to put a hood over its coking operation, but the hood kept the sometimes-dangerous gases concentrated near the working area of some employes, creating too much of a health hazard for them.

He points out that the problem with the coke plant is an industry-wide one.

On Geneva's plus side, Erickson points to the numerous recirculating operations within the plant. As an example he cites the conversion of coke oven gas to various kinds of nitrogen fertilizer. Geneva produces 80 per cent of the nitrogen fertilizer used in the state of Utah. "And there are only two steel plants in the country with nitrogen plants, says Erickson.

The plant also recirculates 10,000 tons of scrap metal each month, including old cars, bed springs, etc. The engineers at Geneva claim they are continually searching for commercial uses of the many waste materials being dumped by the plant on its slag piles. "Someday we will make toothpaste out of the fluoride precipitates," laughs Dave Bigler.

The first question

All this is fine, but what the average citizen wants to know is simple: how is Geneva Steel affecting the air I breathe?

That is a question much easier asked than answered. One thing is certain: the pungent odor sometimes so evident in Utah County is definitely of Geneva origin. It comes from the coking operation. A number of individuals voiced their suspicions to *Monday Magazine* that Geneva Works was turning off its electrostatic precipitators at night. As evidence, they cited the black pall of smoke that hangs over the land each morning before the sun rises.

Neither infrared photography, interviews with plant employees, nor the testimony of experts independent of Geneva in any way bears the contention out.

Dr. A. Clyde Hill, a botanist at the University of Utah who gave expert testimony during the fluoride controversy, scoffs at the notion.

"Nobody can operate that way and stay in business. I think the notion is virtually an impossibility. They have to keep their emissions down very low or else be back in the fluoride problem."

What causes the heavy smoke concentrations early mornings? The cold air of night tends to create a strong inversion in the valley, trapping the smoke down until the warmer rays of a rising sun heat the earth and began the upward motion of air currents. Thus, the 'morning pall' around Geneva would seem to exist for purely natural reasons. Geneva is not saving up smoke during the day and letting it out at night, as some have accused.

State's highest

But the central debate regarding Geneva Steel centers around its contribution to particulate pollution in the County. Particulate pollution is simply a measure of the number of particles of all sizes and compositions suspended in the atmosphere. Utah County has the highest level of particulate pollution in the state, and Provo is the worst city in the county, regularly exceeding the national primary standard of 75 micrograms per cubic meter and occasionally exceeding the state episode level of 500 gms. per cubic meter (1,000 grams/cu.m. would be considered very dangerous).

Is Geneva the culprit causing this high level of particulate pollution? That is the stickiest problem facing the established regulatory agencies right now.

BYU Study

An independent study in 1970 by L. Douglas Smoot of the BYU Chemical Engineering Department and a masters thesis by Curtis Morgan submitted to the same department in 1971

Boyd Erickson: "Nobody in the world is more conscious of that 'pink' than we are."

both note the potentially serious particulate pollution problem in Utah County, and each assume without proof that Geneva is the source.

Gedgaudas was telephoned in Denver about the situation.

"It appears more than half of the emissions of particulates in Utah County are from Geneva Steel," he says. "We also have a large contribution from 'fugitive' sources — natural sources, very difficult of control. If we are to meet the national air standards, we have no choice but to control Geneva."

The Morgan thesis estimates Geneva's particulate contribution to be 10.3 tons per day, or about 3,800 tons of particles put into the air each year. The State Divison of Health emissions inventory summary for Utah County estimated the total number of particulates being put into the air by man as nearly 12,000 tons annually. The two figures taken together would suggest Geneva is responsible for about a third of all particles being artificially put into the air.

Unfortunately, pollution measuring devices do not normally distinguish between man-produced particulates and dust naturally occuring in the atmosphere. It is difficult to determine whether or not Geneva's 3,800 tons a year are really the cause of the higher particulate pollution in the expected, Geneva disputes the conclusion.

"If we are really the source of Provo's particulate pollution problem," asserts Boyd Erickson, "You would expect that measurements of particulates in locations near the plant would be higher than those father away. But there is no such clear pattern that can be identified.

"Furthermore, over a long period of time, there is a predominance of wind blowing away from Provo. Thus, the majority of our particulates must be carried north and east — that is, in fact, the direction where most of the fluorine cases came from in the 1950's."

Erickson claims he has observed the particulates gathered from collectors in Provo and compared their color with particulates gathered from collectors around Geneva. "We get grey and brown pads out here and black pads in Provo. I just don't think it's the same stuff."

Geneva is not alone in this contention. Dr. Grant S. Winn, Director of the Utah State Divison of Health Bureau of Air Quality, essentially agrees with Geneva's contention. "Geneva's particulate pollution blows toward Lindon and not into Provo. Local industry is the chief contributor or to Provo's pollution, not Geneva," claims Dr. Winn.

Thus, the head of Utah's Bureau of Air Quality directly disagrees with the conclusions of a top technical adviser in the EPA. All do agree that Geneva puts out the majority of man-made particulate emmissions; but what that really means, particularly for Provo.

It is almost sad to conclude that no one really knows whether tightening up on Geneva will really improve the local air quality, but that is the case.

There is a desperate need for a careful and exacting scientific study to be made in order to solve three critical, unresolved questions:

1) What pattern do the winds in Utah County generally follow? Where are Geneva's 10-plus tons per day really being carried?

2) Where are the particulates being measured around the County coming from? Are they steel manufacturing emissions, or sources? (Until this is resolved, anyone's contention is almost worthless.)

3) What contribution is actually being made to the particulate level from naturally occuring dust in the atmosphere? There are, after all, many virgin wilderness areas, that could not meet the present standard because of dust in the air.

Geneva claims it has begged the EPA to make such a study, and their desire in this regard would seem justified. If Geneva is truly conficent of its innocence, the company should conduct the tests itself. It is not inconceivable that after the

(Cont. on next page)

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(Cont. from page 14)

The discussion centers around the Star Trek convention to be held in the Salt Palace on September 23 and 25, 1976. It will feature uninterrupted reruns of Star Trek episodes, art displays and lecturs. Roddenberry, Nimoy and James Doohan ("Scotty") will be among the speakers. An estimated five thousand fans will pay either $12 in pre-registration or $24 at the door for this chance to socialize with each other and the people in the series. One girl plans to come from Mississippi to attend the convention.

But uniforms and conventions aren't the club's only projects. The group, which members insist is a service organization, not a "fan club," gave the second most hours to Telefund of any campus organization.

The number of interested Y students has declined, and maybe the biggest reason is the fact that early in the semester the officers sold tickets to films they couldn't get and had to give refunds.

"We promised something we couldn't come up with," Jackie explains to a group sadly, "so a lot of people believe the convention isn't going to come off, but they're mistaken."

While the officers speak with the official sounding gravity of businessmen in a conference, the group members are alive with an excitement like that of rebels happily setting themselves off from the rest of the community. They applaud noisily when someone suggests a petition to get Star Trek back on the air. They laugh vigorously at jokes, such as one about a slightly racy Star Trek episode "Amok Time" to be shown at the convention. "Spock must go back to Vulcan for biological reasons," Jackie says tactfully.

On a more serious note, Jackie asks the group urgently about the convention: "Can you see what's involved and what you're getting yourselves into? Now, can I see a number of hands of those who would be willing to help. Instantly, everyone's hand shoots up and Jackie nods appreciatively.

Another club project is the reconstruction of the bridge area of the TV's "Starship Enterprise" to be called the "Excalibur" since the name "Enterprise" is copywrited. They will build a control panel and three screens for motion pictures. "I look forward to the day when man can build an entire 'Enterprise,'" says Robert.

"I learned a lot about engineering work on our shuttle craft," explains Leane Bowen, a freshman majoring in special education.

"We're developing our talents incredibly," Jackie says. The club has several divisions including make-up (doing Vulcan ears, for instance), service or "communications," electrical and mechanical engineering, physical and biological science, clothing, art, photography and journalism, in which members work on their newspaper *The Subspace Transmitter*.

For another project, two Chevy vans will be painted like Shuttle craft and offered for ambulance use to Provo City. Club members will be trained by club Pilot. All programs to take patients on their excursions to the hospital. Building them is a way to be of service and at the same time have fun," Robert says pleasantly.

But not all Star Trek fans are enthused about the BYU club. "It always makes me a little ill when I see teeny boppers going over and attacking Lenord Nimoy," complains one BYU coed, a devout 'Star Trek' fan and frequenter of conventions. "I only like Star Trek for its writing," she continued. "The actors mean nothing to me."

She called the BYU group immature and criticized them for "trying to duplicate Star Trek in as many ways as possible."

But one member, Suzette Isacson, a freshman in nursing, insists, "We don't worship the stars and we're not a second rate Mickey Mouse fan club."

Jackie states as the club goals "service, to promote brotherhood as exemplified by the Star Trek series and to let Star Trek people know what's been happening with Star Trek."

Star Trek fans will unanimously agree there is a philosophy behind the show, one of brotherhood and as Roddenberry puts it "optimism about mankind's future."

Roberts said the show may differ from Mormonism because it "just looks at what is, right now, but continues." "That's one of the few TV shows I've ever seen where they came right out and said, 'We believe in Christ.'"

It's 10 p.m. The discussion is finished and the meeting is closed in prayer.

Several Trekers stay after to talk to each other. "Meeting people with a common interest is another benefit of the club," Suzette says. And Robert adds, "It breaks down barriers. You get to know and love people."

It is past 10 when many leave. Late, but not too late. There is still enough time to get home by 11:30 to sit in front of the TV set, turned of course, to Channel four for Star Trek.

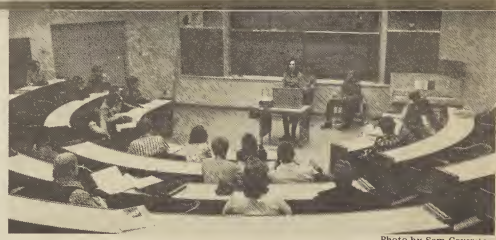

Photo by Sam Coverston

At the beginning of the year the Star Trek club had nearly 300 people interested, the numbers have dwindled since then as seen in this picture of "Commander" Jackie Moore addressing a club meeting.

Kelso won 31 stakes races and nearly $2 million in purses in eight years of racing as a gelding.

NEW HARMONY, Ind. (AP)—The first free public kindergarten in the United States was established in this historic community in 1826 by William Maclure, a Scottish geologist and philanthropist.

Maclure's school, based on the educational principle that children should never be taught what they cannot comprehend, was also the first in this country open to both boys and girls.

The site of many early 19th-century developments in education and social progress in America, New Harmony is now experiencing a massive historic restoration and economic revitalization under Historic New Harmony Inc., a private non-profit organization.

NEW YORK (AP)—In celebration of 1975 as International Women's Year, the Musicians Club of New York offered a March concert by composers Clara Schumann, Louise Ferrenc and Ruth Schonthal.

The New York Lyric Arts Trio, Mary Freeman Blankstein, violin, Wendy Brennan, cello, and Gena Raps, piano, performed two movements from Clara Schumann's "Trio, Op. 17 in G Minor" and "Trio, Op. 34 in Major" by the early 19th-century composer Louise Ferrenc.

Ruth Schonthal, who is German-American, played the first performance of her "Sonata breve" in one movement for piano, composed in 1972.

The concert was free, given with the assistance of a grant from the Music Performance Trust Funds obtained through Musicians Union Local 802.

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Starship enterprise lands on planet BYU...

Photo by Sam Coverston

Commander Lon Wilcox, chief navigator, Commander Jacqueline Moore, and Captain Robert Craven, officers of the Star Trek club, are already making preparations for a Star Trek convention to be held next September in the Salt Palace.

By
JOLENE McBRIDE
Monday Magazine Writer

Red alert: something new on campus.

Those who haven't heard about the Star Trek club might have seen its president Robert Craven, who spent Thursday in his uniform: a long shirt of orange velveteen trimmed in shiny gold and a Star Trek insignia.

"Oh it's Spock," a student says.

"Are you Captain Kirk?" one asked.

"No I'm Captain Craven," Rob answers. And he isn't kidding. Members refer to Rob, a junior in mechanical engineering as "Captain Craven, Ship Commander," a rank further displayed in the three lines of trim on each of his sleeves.

Commander Lon Wilcox, Chief Navigator, also could have been seen in uniform. "We wear our uniforms all day Thursday," he explains after describing the stares he got that evening while taking his wife to dinner in Provo.

"If ROTC can wear theirs on Tuesday, why shouldn't we be able to?"

While these officers wear orange "command" uniforms, Commander Jacqueline Moore, First Officer and Science Officer, wears blue, signifying science, a dress something like those worn on the show except of modest length in compliance with BYU standards.

We made our uniforms and sent away for the insignia worn on the chest, says Jackie, a junior from England majoring in nursing. Star Trek fans from everywhere also send away for posters, Star Trek books, scripts, jewelery and records, mainly of Lenord Nimoy ("Spock") singing.

People on campus "smile or stare" at Jackie in her uniform, she explains in a Julie Andrews type accent. "Or they make comments like 'Where can I get one like that?' 'I don't believe it!' or 'You're kidding!' "

But they're not kidding. According to Lon, their uniforms are a way they can express themselves and solve the problem of "a large segment of the society on this campus that doesn't really take all this seriously."

Though only the officers have uniforms now, the rest of the members will have them soon.

Over 300 Y students were interested in joining the club when it was first announced.

Gene Roddenberry, Star Trek's writer and producer whom fans have affectionately named "the great bird of the galaxy" in a letter to Star Trek Clubs, said fans are "an exciting spectrum ranging from bright ten-year-olds to college presidents and statesmen."

Yellow alert: It's 8 p.m. Within the designated area: 172 JKB, the crew of about 25 students has arrived. Star date: 7511.20 (Nov. 20). The meeting commences with prayer, and after a few opening remarks, Captain Craven turns the time over to Commander Moore.

(Cont. on next page)

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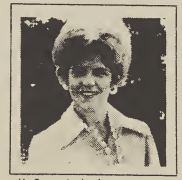

Jaynann M. Payne is the former Mrs. Utah and the runner up to Mrs. America, wife of Deon W. Payne, mother of twelve children, author, and Education Week lecturer.

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(Cont. from page 6)

new precipitators begin operating in October of 1977, the regulatory agencies will find the particulate level is as high as ever.

Or it may drop. But the point is, no one knows.

Water Effluents

While Geneva's most serious pollution problems associated with air, the plant released 20 million gallons of effluent — containing water into Utah Lake daily. All of the water that is released into the Lake goes through various kinds of cleaning processes before being released, depending on its origin after being used inside the plant.

Steelmaking demands large quantities of water. Geneva Works circulates over 280 million gallons every day through its water systems. This is ten times the amount of water used by the cities of Provo and Orem combined, and over three times the average daily water usage of Salt Lake City.

Geneva recently disputed an EPA ruling on the amount of ammonia nitrogen the plant was to be permitted to discharge into the lake, but backed down before the dispute actually entered into the legal arbitration machinery. Geneva ate humble pie and agreed to meet the EPA's standard (no more than 2,700 pounds per day). That decision meant that the steel mill will be in full compliance with all of the legal requirements regarding effluents.

"We were upset over the EPA ruling on the ammonia," says Erickson, "Because we were already so much better than most steel plants in the purity of our water emissions. In the critical ingredients of cyanide and phenol, we emit one-tenth of what would normally be expected from a plant of our type."

A team of 11 scientists (mostly from BYU) currently under contract with the Mountainland Association of Governments to undertake an intensive study on water quality in the Mountainland area (Summit, Utah and Wasatch counties), generally agree that Geneva's pollution of Utah Lake is a minor problem compared with more serious sources (See Part Three of this series in Wednesday's Daily Universe). In terms of nutrients and coliform bacteria (again, see Part Three), Geneva's effluent is considerably cleaner than the water flowing into the lake from natural streams and rivers.

One scientific study, conducted by a Salt Lake City engineering firm, Templeton, Linke and Alsup, for the Utah State Bureau of Water Quality and published in June, 1975, seemed to imply that Geneva's effluent had a considerable higher total coliform bacteria count — 6,439 than the legal limit — 2,000. When confronted with the report, Erickson strongly disputed the finding. Noting that the measurement in question was taken "300 feet from Geneva Steel," he suggested that the source of the bacteria may well not have been the steel mill. He then produced a number of documents showing water analyses made by Ford Chemical Laboratory, Inc. in Salt Lake City and by the State Health Commission, all of which showed the total coliform count to be considerably lower than 2,000 (the highest reading was 430 on Sept. 10 of this year).

Geneva Works feels quite confident about its performance in water pollution control (the list of devices added is as impressive as thelist for air pollution control devices). Dave Bigler flatly says, "If you're trying to catch Geneva Works on water pollution, you're barking up the wrong tree."

A most tentative conclusion

Heavy industry is an absolute essential for the maintenance of high living standards in our society. Each community must determine for itself what compromise it is willing to allow between the benefits of industry and the polluting aspects it usually brings with it.

But we would equally be unwise in either fighting industrial growth for every inch it gains or in assuming that unlimited growth is obviously desirable. Every living creature has an important stake in a healthy, reasonably clean environment. Having been given the right to subdue a delicate earth, man would be unwise to fail to apply all the knowledge he can in that endeavor.

As U.S. Steel would remind us, "It doesn't hurt to give a damn."

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LRC

(Cont. from page 9)

(of course) developed tests and was responsible, at least partly, for the addition of one language group to the LTM program.

One day Ned Winder (secretary to the Council of the Twelve) called Dr. Taylor at the LTM with an unusual request. Seven missionaries were stranded at the Salt Lake Mission Home without the visas they needed to get into South Africa. "He asked us if we could 'babysit' them for a few weeks and I said yes if we could try to teach them Afrikaans."

After a frantic search, Dr. Taylor found Russ Tolman, an Afrikaans speaking returned missionary and hurriedly threw materials together. "They were great elders, we only had three weeks to pour it into them." When the elders arrived in South Africa and walked off the plane speaking Afrikaans, "the Mission president was flabbergasted," Dr. Taylor says with obvious satisfaction as he leans back in his chair and cleans his dark-rimmed glasses. A few weeks later, the Afrikaans section of the LTM was set up.

But amidst all the innovatons, he did not neglect his first love, testing. He developed tests to group missionaries as they came into the LTM according to the level of learning they had already achieved.

"It didn't make sense to lump them all together when some had five years of the language and some hadn't had any," he says. The original intent of that program was to reduce the amount of time some of the elders would have to spend at the LTM but it didn't work out that way. "I guess that was something for the future."

It was. But it still wouldn't happen without him. About two weeks ago, the LRC and the LTM reached an agreement that will eventually do that very thing using tests devised by those working on the FLATS.

The agreement calls for the LRC to provide three parallel tests for each of 22 languages over the next year which will aid in such grouping. Tests will be developed in Spanish, German, French, Portuguese, Italian, Japanese, Dutch, Danish, Swedish, Norwegian, Finnish, Korean, Navajo, Mandarin, Cantonese, Afrikaans, Thai, Persian, Indonesian, Serbo-Croatian, Tahitian, and Samoan.

Twelve of those languages are already being worked on by the LRC and the others are scheduled to begin shortly. When LTM tests and the FLATS for each of these languages is completed, the LRC will become one of the most extensive language testing bureaus in the country, according to Dr. Taylor.

Just as he never forgot the idea of grouping in the LTM, so also, he never forgot the things he learned in the study he did for his master's thesis. He wants to put BYU in that eight per cent who test oral and aural phases of language skills.

The result is a system of testing grammar, listening, speaking, reading, writing and culture at levels that would be expected of students completing 101-102, 201-211-311 class equivalents. Because of the extensive nature of the tests and their levels of measurement, it will be possibly not only to standardize all grading systems for all languages, but also to discriminate between people getting the same grade and tell them exactly where they are weak and where they are strong in the language.

This discriminating nature of the FLATS is unique in language testing in the U.S. and leads those involved in the project to dream of the systems potential uses—a national language testing Bureau, language skills diagnostic service for teachers and students, home study language credit, as well as use by businesses for potential foreign representatives.

"We see them becoming standard, published and made available to other institutions. We think they'll become widely used," Dr. Taylor said of his FLATS.

If his prediction is right, you can bet that a lot of people especially educators and business executives, will know that something called FLATS will lift BYU to an even higher stature as an international institution. And Dr. Taylor and his FLATS crew will be recognized as a real bunch of "sharps."

If Catfish Hunter draws the opening day pitching assignment of April 8 in Cleveland, he will be making his Yankee debut on his 29th birthday. That's also the number on his uniform.

The St. Louis Cardinals have won 8 of 12 World Series. That's the top National League figure.

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LRC—no Tower of Babel

By ROBERT HERRICK

Monday Magazine Writer

The scene is the ACME Foreign Trade Company personnel office sometime in the 1980s. A young man is applying for an important job.

"Mr. Jones, as you know the position you have applied for in our Samoan office requires the use of the native language in order to effectively represent our company," the personnel manager tells the young college graduate. "Your resume says that you have such a language skill."

"Yes sir," the young man answers, "My father was there for several years and he taught me the language."

"Well, in order to be sure you know enough about the language for our needs, we're going to send you to Brigham Young University to take the FLATS."

"Flats?" asks the young man. "What the heck is that?"

"FLATS stands for Foreign Language Achievement Test Series, something that the university developed back in the 1970s to help businesses, universities and other agencies test language skills they themselves do not have or teach but which they may need in others. It is used all over the country by companies hiring foreign representatives, in giving university credit in languages that aren't usually taught, as placement exams in languages that are taught and dozens of other purposes."

"You mean a Mormon school did all that?"

"They had a lot of impetus—all those returned missionaries from far out places that wanted credit in their mission languages."

Although this conversation is fictitious, it is real in the minds of the dozen test developers working in Language Research Center on campus.

Under the direction of Dr. James S. Taylor, the LRC testing project has grown in aim from developing a standard test series for returned missionaries for credit at BYU to becoming a major language testing center in the United States. But the most immediate benefits will be for returned missionaries and other BYU students.

"In the past, there has been a feeling that because of the nature of certain languages or the lack of literature full credit should not be given to some. So a returned missionary gets 8 hours credit in Navajo and 16 in Spanish. That's not fair," Dr. Taylor says as he sits in his book-filled office on the second floor of the Fletcher Building.

Funded with a grant from the university through the College of Humanities, and overseen by Dr. Max Rogers, assistant dean of the college, Dr. Taylor set out to correct that unfairness.

Drawing on his vast experience in the field ("I've been involved in language testing since I was a graduate student"), Dr. Taylor who is fluent in both Spanish and German, designed a test in Spanish to provide a model for all the tests. Then he started putting together a team of test developers from among the BYU community.

students and others who could see language patterns, knew the language they would test and who could be taught "something about testing techniques." The result is a group of native speakers and returned missionaries some of whom work for pay and others for project credit in various departments.

One of the first developers Dr. Taylor found was Lynn McMurray, now a first year missionary from Tonga. McMurray, whom Dr. Taylor describes as "sharp and well-organized," began work on the Tongan test in the Fall of 1974 as one of the first five developers. The others were in Thai, Tihitian, Indonesian and Vietnamese. That sharpness quickly paid off for the LRC and the load of supervising the developers gradually shifted to McMurray's shoulders. Those first few months were very frustrating for McMurray.

One time the girl from Thailand who was working on the Thai test asked a fellow worker to throw away five or six rough drafts of the test. "When she came back, we couldn't find the final copy," McMurray relates. "We tore the room apart and finally found it in tiny pieces in the trash with the rough copies. It took us three hours to scotch tape the whole thing back together!"

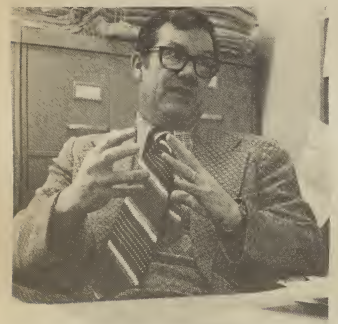

Photo by Sam Coverston

The LRC testing project has grown under the direction of Dr. James S. Taylor pictured above.

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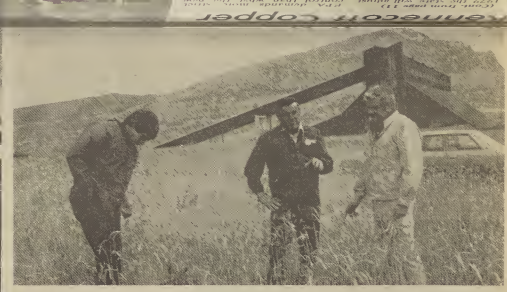
One of Kennecott's Acid plants converts sulfur gases to sulfuric acid to control polluting emissions. Only five of the seven plants are now operating because the new smelting system is being installed.



Bob Entzminger, white coat, an executive from the U.S. Forest Service's organization dealing with surface mining (SEAM) talks with Kennecott environmental technicians about their revegetation program.

Kennecott Copper

(continued from page 12)

statement appears which sums up its view of this issue. It reads: "It would be improvident and foolish to disrupt the company's ongoing program with dubious technology to obtain unnecessary results at an exorbitant expense of wasted energy and assets. If the EPA has no better reasons than it has advanced so far, Kennecott sees no logical or sensible purpose in doing so."

However, Gedgaudas believes the EPA has logical and sensible reasons behind requiring Kennecott to use a certain type of pollution control system, even if it means disrupting the program Kennecott has been working on for the past two years. The added equipment EPA wants installed will probably cost Kennecott an additional $3.5 million, said Gedgaudas. Compared to the $280 million already projected for Kennecott's version of the system, $3.5 million is only an additional one-and-one-fourth per cent. Kennecott would also be able to take a tax break on it if they used the EPA system, he said.

Yet, Heaney insisted the $3.5 million figure is a drastic underestimate by Gedgaudas. To install all the equipment the EPA calls for would probably take more than an extra $10 million, he said.

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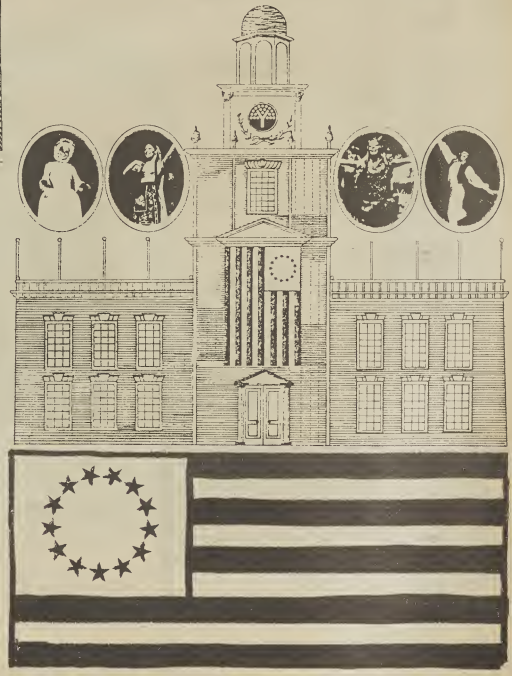

Kennecott Copper

(Cont. from page 11)

In 1979 the state will adjust its regulations based othe observed data, Wynn added. The EPA believes Kennecott should meet the more strict requirements of the EPA by 1977.

Heaney said, however, the July 31, 1977 deadlinc for the start up of the new pollution control facility can only be met if Kennecott has no interruption in its present project. In other words, if the EPA demands more strict control than what the new Kennecott project will provide, or what the variance allows, then the 1977 deadline will be missed.

The Utah Air Conservation Committee submitted regulations to the EPA for the Kennecott smelter on July 21, 1975. The SPA failed to approve fou significant parts of these regulations. In the Sept. 19 issue of the Federal Register

A wind-powered generator is used to run one of Kennecott's remote meteorological stations surrounding the smelter.

the EPA stated it disapproves the Utah regulation because:

1— it doesn't contain an emission rate sufficient to attain the national standards (The Utah regulations call for 86 per cent control of sulfur dioxide emissions, but the EPA wants 94 per cent control).

2— it is unenforceable since no method of determining compliance is specified.

3— it contains a malfunction provision which would effectively prevent enforcement of the monthly emission standards.

and 4— it allows the use of the 1,200-foot stack without first requiring the use of other reasonably available control technology.

'Out in left field'

But the head of the State Air Quality Bureau, Grant Winn, said "I think the EPA is clear out in left field. The whole story is about ambient air quality and as long as the standards are met it doesn't matter how."

Kenncott's new system has three controversial procedures. First, the new smelter system will be a typc never before used in the United States. Second, the new acid plant will be a single

requires the use of double absorption plants with a 99.5 per cent efficiency). And third, Kennecott proposes to have a fluctuating control on the smelter emissions so during good weather conditions it could release more pollutants into the air than during bad weather conditions. The EPA wants a standard low emission rate for all types of weather.

The State Air Quality Bureau agrees with Kennecott that all three of these procedures are adequate for meeting the ambient air standards for sulfur dioxide. "Our best guesses are that Kennecott will meet the standards with this system," said Mrs. Phillip Fredrick, chairman of the State Air Conservation Committee.

KCC statement

In the Autumn, 1975 issuc of "Kennescope," Kennecott's employe publication, a

(cont. page 13)

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McMurray, an inquisitive and intellectual scholar (he graduated from BYU last year with a 3.93 GPA), is fond of trying to learn bits of the other languages being used, especially other polynesian tongues such as Samoan.

Reed Tolman, a dark-haired history major who served a mission in Samoa can often be found exchanging words and phrases with McMurray while he works on his test. To an ignorant observer, the research room in the Fletcher Building looks like a modern day Babel while the two exchange different sounding clicks, clucks, ohs and "what was that again's."

For Tolman, however, the biggest challenge is neither his Samoan test nor McMurray's curiosity, it is "my mission buddies." Anxious for a chance to get full credit for their two years of language experience, "there's about 30 Samoans down my neck to finish the tests," Tolman says with a harried look.

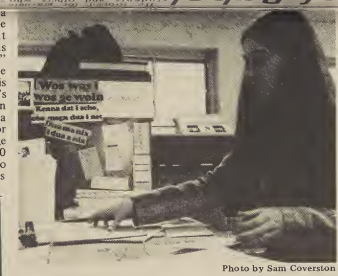

Photo by Sam Coverston

"How do I know what you want?" is one of the questions posted above Debbie Coon's desk, a secretary for the LRC. The three phrases are written in an Austrian dialect of German.

Tolman's buddies may have a while to wait yet, at least for the final version of the test to be completed. The program outlined by Dr. Taylor includes a long period of evaluation and experimental testing before the finished product is ready for publication.

As one part of each test is completed, it is sent by the developer to various experts in the language to be evaluated. For example, McMurray's Tongan test has been sent to Dr. Rick Shumway of the BYU Hawaii Campus, Dr. Ermel Morton, president of the Ricks College Language Training Mission and translator of the Book of Mormon into Tongan, Tongan natives living in Utah, and LDS church school administrators in Tonga, among others. While expert opinion is being sought, the test is administered to small groups of students for credit and the results are evaluated.

This evaluation period may take up to a year. Then the final revisions will be made and the test will be published and copywrighted.

"We feel that the credit for the test should go to the compiler, so the tests will be published with the name of the person on it as the author," Dr. Taylor says.

Sharing the credit for the tests is something Dr. Taylor can well afford to do. His name and fame in language testing is already quite secure.

When he says that he has been involved in language testing since his days as a graduate student he means it. His master's thesis at BYU was on the various ways that schools and universities test languages for placement and credit. In that study, he found that less than eight per cent of the institutions in the United States tested speaking and listening skills.

After obtaining his master's degree, Dr. Taylor studied for his Ph.D. at Ohio State where he worked closely with Prof. Paul Pimsleur in developing proficiency tests in Spanish and German. The Pimsleur tests are now widely used by schools and government agencies.

After leaving OSU, Dr. Taylor was in charge of curriculum, teacher training, text development, and testing at the BYU LTM from 1968 to 1970. During that time, he

(Cont. on page 19)

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Photo by Don Canova

Kennecott's huge copper smelter, nestled in the northern foothills of the Oquirrh Mountains, is Utah's major source of air polluting sulfur dioxide. By 1977 a new control system, using the 1,200 foot stack shown in the picture, should bring the emissions within national standards.

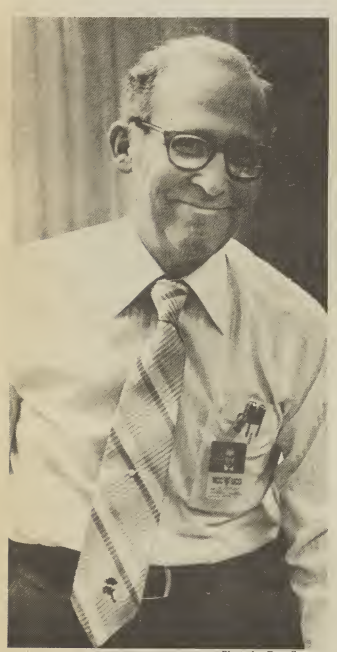

Photo by Don Canova

C.A. Zeldin, Kennecott special project manager, says the 1977 deadline can be met. But, "I don't know what we will do when EPA publishes its new rules."

The Kennecott Story:

Clashing with the EPA

By DONALD B. CANOVA
Universe Writer

By July 31, 1977 Utah's largest industrial complex, Kennecott Copper Corporation, must have a system operating that will virtually eliminate air polluting emissions from its gargantuan copper smelting works near Magna, Utah.

So says the Environmental Protection Agency (EPA) in its list of rules and regulations, Kennecott officials agree, but the method for complying with these regulations has been a controversy since the need for it was proposed with the Clean Air Act of 1967.

The EPA has just written an ultimatum which gives their final viewpoint about this controversy. The document was signed by EPA Administrator Russell E. Train on Nov. 20 and will soon be published in the Federal Register.

Kennecott's Move

According to Marius Gedgaudas, EPA technical advisor who wrote the document, the next move is up to Kennecott which will probably petition the EPA for reconsideration. This will more than likely be denied by Train, he added. Kennecott's choice would then be either accept the EPA proposals or take the agency to court.

Kennecott's main problem is controlling sulfur dioxide and visible emissions which result from smelting copper in huge furnaces. The company has tried to alleviate this problem by using elaborate acid plants where the sulfurous gases are trapped and processed to produce sulfuric acid.

However, this project hasn't provided enough control, says the EPA in its publications. So in 1972 Kennecott drew up a new proposal costing $175 million that will use a type of smelting system never before tried in the United States. It is connected to a huge 1,200-foot smoke stack.

The making of the smoke stack last year was a gigantic and widely publicized operation. It is now 80 per cent finished, according to C.A. Zeldin, Kennecott special project Manager. The EPA says the new system, including the stack, still won't provide enough control to meet the air standards they prefer.

Kennecott, however, insists the system will work and is going ahead with the project which is already about 20 per cent complete. The cost for the system has inflated to $280 million, according to Zeldin, an increase of 60 per cent.

Sulfur effects

Effects of sulfur dioxide on our environment are widespread, according to the Consumer Protection and Environmental Health Service. It adversely affects the visibility and color of the air, the health of plants, and to some extent paint and limestone materials used in cities. The greater the concentration of the gas in the air, the greater the damage done to the environment, says the Health Service.

When John Muir in 1877 first described the Oquirrh Mountains, upon which most Kennecott pollution falls, he said it was an area of "few small weedy looking patches of spruce and fir." Yet, when the original smelting plant started opcration in 1906 with its extremely high sulfur dioxide emissions, Much of this vegetation was wiped out in a 2 to 3 mile radius around the smelter. Jim Fletcher, who was head of Kennecott's revegetation program which has been going since Kennecott bought the smelter said there was barely enough plant life around to take a test sample.

Erosion problems

With the foliage gone, severe erosion also started to develop which hindered any revegetation process. But, "the plants are naturally coming back as the sulfur dioxide emmissions decline," said Robert J. Heaney, a Kennecott environmental engineer.

The copper smelter was first built by the American Smelting Company. But not until 1942 were five acid plants installed to capture the extremely high concentrations of sulfur gases. Kennecott bought the smelter in 1959 and has since installed two more acid plants.

Much of the original defoliated area is still barren, said Heaney, but Kennecott committed itself in May, 1973 to a 10-year program to try and revive the vegetation. The program involves intensive planting with farming techniques, said Vern Huser, a Kennecott spokesman. But Heaney said, it will take longer than 10 years for vegetation to return, "maybe over 20 years."

Because of the adverse affect of sulfur dioxide on the agricultural crops in the Tooele and Magna areas, Kennecott also pays farmers for their losses each year. When Kennecott bought the smelter in 1959, it paid farmers only $41. But in 1973 the payments totaled $29,493. The amount of payments vary from year to year, ranging from a couple thousand dollars one year to many thousands the next.

500 tons a day

Still, about "500 tons of sulfur dioxide comes out of our stacks each day," confirmed Heaney. This is because two of the acid plants were shut down earlier this year and are being demolished to provide space for constructing the new smelting and acid plant system.

The Utah Air Conservation Committee has recently reset maximum sulfur dioxide standards for Kennecott because of the acid plant demolitions. The maximum standard is now 646 tons of

(Cont. on next page)

Kennecott Copper

(cont. from page 10)

sulfur dioxide per day during a six-day work week. Yet, on Nov. 4, when Heaney said Kennecott puts out 500 tons of sulfur dioxide per day, the smelter was only operating five days a week.

A final document signed Nov. 20 by the EPA determined the Kennecott smelter cannot exceed 70 tons per day of sulfur dioxide emmissions when their new system is finally in operation in 1977. The EPA maximum national standard for sulfur dioxide emissions is .5 parts-per-million (ppm) in a three-hour-period, or .3 ppm in a 24-hour period. There are also monthly and annual

Inversions

During the temperature inversions in the first week of November, 1975, the three-hour level of sufur dioxide gas was between .6 ppm and .9 ppm around the smelter, said Heaney.

In April 1973, the EOA monitored the air around the smelter and found the concentrations of sulfur dioxide much over standards. In the city of Magna they the gas to be as high as 1.09 ppm in a three-hour period. At closer points to the smelter the gas was even more abundant, at one place reachinga high of 5.64 ppm in a three-hour period.

According to Grant Winn, executive-secretary and chief of the Utah Air Quality Bureau, Kennecott may emit this high volume of sulfur dioxide at present because of a variance order given by the Committee and sanctioned by the EPA. This order gives the corporation until July 31, 1977 to clean up emissions. What happens after this date will depend on how Kennecott, the Utah Air Quality Bureau, and the EPA work out their differences of opinion.

Winn said Kennecott will have to meet state sulfur dioxide emissions requirements for an interim 1979. But the EPA says the state requirements for that time are not strict enough. Kennecott agrees with the state stipulations.

Adjusted regulations

The time between 1977 and 1979 will be a period when the State Air Conservation Committee will observe Kennecott's hopefully reduced emissions.

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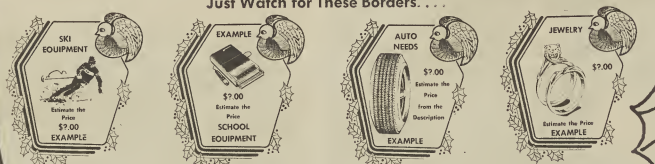

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